



7th Assignment: Applied Networking Lab WS 23/24

Question : (6 + 5 =11 Points): POX&RYU controller in Mininet

Objective:

The mininet in a Software-Defined Networking (SDN) lab is to provide a platform for emulating and testing SDN environments in a controlled and scalable manner. Mininet allows users to create virtual networks on a single machine, enabling network developers, researchers, and students to experiment with SDN concepts, test network applications, and simulate various network scenarios.

Question 1: (6 Points):

How can you enhance the Bellman-Ford shortest route selection algorithm when implementing it within a POX controller in Mininet for a software-defined networking (SDN) environment with a graph comprising 20 nodes and edges?

1. Find the shortest route between nodes of your choice?
2. Write a simple function through which you can find longest route between nodes of your choice (the nodes should be same as of first query).
3. Ping different nodes for network connectivity.
4. Allocate the bandwidth to the nodes and then find out bandwidth for few nodes.
5. Also display the number of connected nodes starting from destination to source nodes.

Question 2: (5 Points):

Install RYU controller in Mininet and run the following topology over it and gives the result in the form of screen shots.

1. Take a graph of 15 nodes and their edges.
2. Run Dijkstra algorithm on the graph and find shortest routes.

3. Ping different nodes for network connectivity.
4. Allocate the bandwidth to the nodes and then find out bandwidth for few nodes.
5. Also display the number of connected nodes starting from destination to source nodes

Due Date: February, 11th, 2024, 10:00 am

Upload all relevant files (answers to theoretical questions as either PDF or .txt plus, .pkt, GNS-3 config files, etc.) to ISIS:

<https://isis.tu-berlin.de/course/view.php?id=35211>

Put the names and Student ID numbers (Matrikelnummer) of **all** your group members on your solution!